

SAFETY DATA SHEET

according to GB/T 16483 and GB/T 17519



Freon™ 123 (R-123) refrigerant

Version 11.0 Revision Date: 2025/05/27 SDS Number: 1329685-00047 Date of last issue: 2025/03/05
Date of first issue: 2017/02/27

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Freon™ 123 (R-123) refrigerant

SDS-Identcode : 130000024258

Manufacturer or supplier's details

Company : The Chemours Chemical (Shanghai) Co., Ltd.

Address : 9F, SCG Parkside, 868 Yinghua Road, Pudong New District
201204, Shanghai, China

Telephone : 86 400 8056 528

Emergency telephone number : 86 532 8388 9090

E-mail address : SDS.ChinaPSR@chemours.com

Telefax : 86 21 2612 0862

Recommended use of the chemical and restrictions on use

Recommended use : Refrigerant

Restrictions on use : For professional and industrial installation and use only.

2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance : liquid
Colour : colourless
Odour : slight, ether-like

May cause drowsiness or dizziness. Harmful to aquatic life with long lasting effects. Harms public health and the environment by destroying ozone in the upper atmosphere.

GHS Classification

Specific target organ toxicity - single exposure : Category 3

Short-term (acute) aquatic hazard : Category 3

Long-term (chronic) aquatic hazard : Category 3

Hazardous to the ozone layer : Category 1

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GHS label elements

Hazard pictograms	:	
Signal word	:	Warning
Hazard statements	:	H336 May cause drowsiness or dizziness. H412 Harmful to aquatic life with long lasting effects. H420 Harms public health and the environment by destroying ozone in the upper atmosphere.
Precautionary statements	:	Prevention: P261 Avoid breathing mist or vapours. P271 Use only outdoors or in a well-ventilated area. P273 Avoid release to the environment. Response: P304 + P340 + P319 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Get medical help if you feel unwell. Storage: P405 Store locked up. Disposal: P501 Dispose of contents/ container to an approved waste disposal plant. P502 Refer to manufacturer/ supplier for information on recovery/ recycling.

Physical and chemical hazards

Not classified based on available information.

Health hazards

May cause drowsiness or dizziness.

Environmental hazards

Harmful to aquatic life. Harmful to aquatic life with long lasting effects. Harms public health and the environment by destroying ozone in the upper atmosphere.

Other hazards which do not result in classification

Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.

Misuse or intentional inhalation abuse may cause death without warning symptoms, due to cardiac effects.

Rapid evaporation of the product may cause frostbite.



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3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Substance
Substance name : 2,2-Dichloro-1,1,1-trifluoroethane
CAS-No. : 306-83-2

Components

Chemical name	CAS-No.	Concentration (% w/w)
2,2-Dichloro-1,1,1-trifluoroethane	306-83-2	100

4. FIRST AID MEASURES

General advice : In the case of accident or if you feel unwell, seek medical advice immediately.
When symptoms persist or in all cases of doubt seek medical advice.

If inhaled : If inhaled, remove to fresh air.
Get medical attention if symptoms occur.

In case of skin contact : In case of contact, immediately flush skin with plenty of water.
Get medical attention if symptoms occur.

In case of eye contact : Flush eyes with water as a precaution.
Get medical attention if irritation develops and persists.

If swallowed : If swallowed, DO NOT induce vomiting.
Get medical attention if symptoms occur.
Rinse mouth thoroughly with water.

Most important symptoms and effects, both acute and delayed : May cause cardiac arrhythmia.
Inhalation of high concentration may cause
Anaesthetic effects
Dizziness
confusion
Light-headedness
Drowsiness
Unconsciousness
Irregular cardiac activity
fainting
Weakness
Skin contact may provoke the following symptoms:
Irritation
Discomfort
Pain
Swelling of tissue
Rash
Itching



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Eye contact may provoke the following symptoms
Discomfort
Pain
Redness
Impairment of vision
Adverse effects from repeated inhalation may include
Liver disorders
May cause drowsiness or dizziness.

Protection of first-aiders : First Aid responders should pay attention to self-protection, and use the recommended personal protective equipment when the potential for exposure exists (see section 8).

Notes to physician : Because of possible disturbances of cardiac rhythm, catecholamine drugs, such as epinephrine, that may be used in situations of emergency life support should be used with special caution.

5. FIREFIGHTING MEASURES

Suitable extinguishing media : Not applicable
Will not burn

Unsuitable extinguishing media : Not applicable
Will not burn

Specific hazards during fire-fighting : Exposure to combustion products may be a hazard to health.

Hazardous combustion products : No hazardous combustion products are known

Specific extinguishing methods : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Use water spray to cool unopened containers.
Remove undamaged containers from fire area if it is safe to do so.
Evacuate area.

Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.
Use personal protective equipment.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency measures : Use personal protective equipment.
Follow safe handling advice (see section 7) and personal pro-



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Take care to prevent spills, waste and minimize release to the environment.

Avoidance of contact : None.

Storage

Conditions for safe storage : Cylinders should be stored upright and firmly secured to prevent falling or being knocked over.
Separate full containers from empty containers.
Do not store near combustible materials.
Avoid area where salt or other corrosive materials are present.
Do not expose drums to direct heat or temperature above 46°C (115°F) to avoid pressurizing and possibly distorting the drums.
Material should not be dispensed by pouring from pail/drum shipping containers containing 5 gallons or more. The use of a drum pump is recommended for dispensing from pail/drum shipping containers with 5 gallons or more, except for smaller containers where adequate ventilation can be used to manage the exposure.
Keep in properly labelled containers.
Store locked up.
Keep in a cool, well-ventilated place.
Store in accordance with the particular national regulations.

Materials to avoid : No special restrictions on storage with other products.

Recommended storage temperature : < 46 °C

Storage period : > 10 yr

Further information on storage stability : The product has an indefinite shelf life when stored properly.

Packaging material : Unsuitable material: None known.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Contains no substances with occupational exposure limit values.

Engineering measures : Minimize workplace exposure concentrations.
If sufficient ventilation is unavailable, use with local exhaust ventilation.

Personal protective equipment

Respiratory protection : Use a positive pressure air supplied respirator if there is any



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	potential for uncontrolled release, exposure levels are unknown.
Eye/face protection	: Wear the following personal protective equipment: Safety glasses
Skin and body protection	: Skin should be washed after contact.
Hand protection Material	: Low temperature resistant gloves
Remarks	: Choose gloves to protect hands against chemicals depending on the concentration and quantity of the hazardous substance and specific to place of work. For special applications, we recommend clarifying the resistance to chemicals of the aforementioned protective gloves with the glove manufacturer. Wash hands before breaks and at the end of workday. Breakthrough time is not determined for the product. Change gloves often!
Hygiene measures	: If exposure to chemical is likely during typical use, provide eye flushing systems and safety showers close to the working place. When using do not eat, drink or smoke. Wash contaminated clothing before re-use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: liquid
Colour	: colourless
Odour	: slight, ether-like
Odour Threshold	: No data available
pH	: 7
Melting point/freezing point	: No data available
Initial boiling point and boiling range	: 27.8 °C
Flash point	: does not flash



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Evaporation rate	:	< 1 (CCL4=1.0)
Flammability (solid, gas)	:	Not applicable
Flammability (liquids)	:	Will not burn
Upper explosion limit / Upper flammability limit	:	Upper flammability limit Method: ASTM E681 None.
Lower explosion limit / Lower flammability limit	:	Lower flammability limit Method: ASTM E681 None.
Vapour pressure	:	913.6 hPa (25 °C)
Relative vapour density	:	5.5
Relative density	:	1.47 (25 °C)
Density	:	1.46 g/cm ³ (25 °C) (as liquid)
Solubility(ies) Water solubility	:	3.9 g/l (25 °C)
Partition coefficient: n-octanol/water	:	No data available
Auto-ignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity Viscosity, kinematic	:	No data available
Explosive properties	:	Not explosive
Oxidizing properties	:	The substance or mixture is not classified as oxidizing.
Particle characteristics Particle size	:	Not applicable

10. STABILITY AND REACTIVITY

Reactivity	:	Not classified as a reactivity hazard.
Chemical stability	:	Stable under normal conditions.



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Possibility of hazardous reactions : None known.
Conditions to avoid : None known.
Incompatible materials : None.
Hazardous decomposition products : No hazardous decomposition products are known.

11. TOXICOLOGICAL INFORMATION

Exposure routes : Inhalation
Skin contact
Ingestion
Eye contact

Acute toxicity

Not classified based on available information.

Components:

2,2-Dichloro-1,1,1-trifluoroethane:

Acute oral toxicity : LD50 (Rat): 9,000 mg/kg
Method: OECD Test Guideline 401

Acute inhalation toxicity : LC50 (Rat): 32000 ppm
Exposure time: 4 h
Test atmosphere: gas

Lowest observed adverse effect concentration (Dog): 20000 ppm
Symptoms: Cardiac sensitisation

No observed adverse effect concentration (Dog): 10000 ppm
Symptoms: Cardiac sensitisation

Cardiac sensitisation threshold limit (Dog): 124,000 mg/m³
Symptoms: Cardiac sensitisation

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg
Assessment: The substance or mixture has no acute dermal toxicity

Skin corrosion/irritation

Not classified based on available information.

Components:

2,2-Dichloro-1,1,1-trifluoroethane:



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Species : Rabbit
Result : No skin irritation

Serious eye damage/eye irritation

Not classified based on available information.

Components:

2,2-Dichloro-1,1,1-trifluoroethane:

Species : Rabbit
Result : No eye irritation

Respiratory or skin sensitisation

Skin sensitisation

Not classified based on available information.

Respiratory sensitisation

Not classified based on available information.

Components:

2,2-Dichloro-1,1,1-trifluoroethane:

Exposure routes : Skin contact
Species : Guinea pig
Result : negative

Result : negative

Germ cell mutagenicity

Not classified based on available information.

Components:

2,2-Dichloro-1,1,1-trifluoroethane:

Germ cell mutagenicity - Assessment : Weight of evidence does not support classification as a germ cell mutagen.

Carcinogenicity

Not classified based on available information.

Components:

2,2-Dichloro-1,1,1-trifluoroethane:

Carcinogenicity - Assessment : Weight of evidence does not support classification as a carcinogen, Based on data from similar materials

Reproductive toxicity

Not classified based on available information.



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Components:

2,2-Dichloro-1,1,1-trifluoroethane:

Reproductive toxicity - Assessment : Weight of evidence does not support classification for reproductive toxicity

STOT - single exposure

May cause drowsiness or dizziness.

Components:

2,2-Dichloro-1,1,1-trifluoroethane:

Assessment : May cause drowsiness or dizziness.

STOT - repeated exposure

Not classified based on available information.

Components:

2,2-Dichloro-1,1,1-trifluoroethane:

Assessment : No significant health effects observed in animals at concentrations of 1 mg/l/6h/d or less.

Repeated dose toxicity

Components:

2,2-Dichloro-1,1,1-trifluoroethane:

Species : Rat
NOAEL : 3.13 mg/l
LOAEL : 6.3 mg/l
Application Route : inhalation (vapour)
Exposure time : 70 d
Remarks : No significant adverse effects were reported

Aspiration toxicity

Not classified based on available information.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

2,2-Dichloro-1,1,1-trifluoroethane:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 55.5 mg/l
Exposure time: 96 h
Toxicity to daphnia and other : EC50 (Daphnia magna (Water flea)): 17.3 mg/l

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This category is mainly used in refrigerants, foaming agents, fire extinguishing agents, cleaning agents, aerosol, etc. As specified in the accelerated phase-out proposal of hydrochlorofluorocarbons (HCFCs) pursuant to the Montreal Protocol, the production and use of this category in 2013 shall be the average of that in 2009 and 2010; the production and use of this category in 2015 shall be cut by 10% from the average said; that in 2020 by 35%; that in 2025 by 67.5%. By 2030, except for repair and special purposes, this category shall be eliminated completely.

Regulation: Regulations of Ozone Depleting Substances Management (Update: 2021-10-08)

Group: Category V Hydrochlorofluorocarbons

Permits required

Regulation: Regulations of Ozone Depleting Substances Management (Update: 2021-10-25)

Number: 2903720000

13. DISPOSAL CONSIDERATIONS

Disposal methods

- Waste from residues : Do not dispose of waste into sewer.
Dispose of in accordance with local regulations.
- Contaminated packaging : Empty containers should be taken to an approved waste handling site for recycling or disposal.
If not otherwise specified: Dispose of as unused product.

14. TRANSPORT INFORMATION

International Regulations

UNRTDG

- UN number : Not applicable
Proper shipping name : Not applicable
Class : Not applicable
Subsidiary risk : Not applicable
Packing group : Not applicable
Labels : Not applicable
Environmentally hazardous : no

IATA-DGR

- UN/ID No. : Not applicable
Proper shipping name : Not applicable
Class : Not applicable
Subsidiary risk : Not applicable
Packing group : Not applicable



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Labels : Not applicable
Packing instruction (cargo aircraft) : Not applicable
Packing instruction (passenger aircraft) : Not applicable

IMDG-Code

UN number : Not applicable
Proper shipping name : Not applicable
Class : Not applicable
Subsidiary risk : Not applicable
Packing group : Not applicable
Labels : Not applicable
EmS Code : Not applicable
Marine pollutant : no

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

National Regulations

GB 6944/12268

UN number : Not applicable
Proper shipping name : Not applicable
Class : Not applicable
Subsidiary risk : Not applicable
Packing group : Not applicable
Labels : Not applicable
Marine pollutant : no

Special precautions for user

Not applicable

15. REGULATORY INFORMATION

National regulatory information

Regulations on Safety Management of Hazardous Chemicals

Catalogue of Hazardous Chemicals : This product is not listed in the catalogue of hazardous chemicals, but it meets the definition of hazardous chemicals and its principles of determination.

Identification of Major Hazard Installations for Hazardous Chemicals (GB 18218) : Not listed

Hazardous Chemicals for Priority Management under SAWS : Not listed

Catalogue of Specially Controlled Hazardous Chemicals : Not listed



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List of Explosive Precursors : Not listed

Regulations on Labour Protection in Workplaces where Toxic Substances are Used

Catalogue of Highly Toxic Chemicals : Not listed

Regulation of Environmental Management on the First Import of Chemicals and the Import and Export of Toxic Chemicals

China Severely Restricted Toxic Chemicals for Import and Export : Not listed

Regulation on the Administration of Precursor Chemicals

Catalogue and Classification of Precursor Chemicals : Not listed

Yangtze River Protection Law

This product does not contain any dangerous chemicals prohibited for inland river transport.

Regulations of Ozone Depleting Substances Management

List of Controlled Ozone Depleting Substances Import and Export : Listed

List of Controlled Ozone Depleting Substances : Listed

Environmental Protection Law

List of Priority Controlled Chemicals : Not listed

List of Key Controlled New Pollutants : Not listed

Montreal Protocol : 2,2-Dichloro-1,1,1-trifluoroethane

16. OTHER INFORMATION

Revision Date : 2025/05/27

Other information : Freon™ and any associated logos are trademarks or copyrights of The Chemours Company FC, LLC.
Chemours™ and the Chemours Logo are trademarks of The Chemours Company.
Before use read Chemours safety information.
For further information contact the local Chemours office or nominated distributors.

Further information

Sources of key data used to compile the Safety Data Sheet : Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agency, <http://echa.europa.eu/>



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Items where changes have been made to the previous version are highlighted in the body of this document by two vertical lines.

Date format : yyyy/mm/dd

Full text of other abbreviations

AIIIC - Australian Inventory of Industrial Chemicals; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and shall not be considered a warranty or quality specification of any type. The information provided relates only to the specific material identified at the top of this SDS and may not be valid when the SDS material is used in combination with any other materials or in any process, unless specified in the text. Material users should review the information and recommendations in the specific context of their intended manner of handling, use, processing and storage, including an assessment of the appropriateness of the SDS material in the user's end product, if applicable.



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